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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/529,948	04/21/2000	Sergey E Yakovenko	8733.20070	7589

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EXAMINER

DUDEK, JAMES A

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 06/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/529,948

Applicant(s)

YAKOVENKO ET AL.

Examiner

James A. Dudek

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-71 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20, 24, 28 and 46-57 is/are allowed.
- 6) ☒ Claim(s) 1-9, 12-19, 21-23, 25, 30-43, 58-60 and 67-71 is/are rejected.
- 7) ☒ Claim(s) 10, 11, 26, 27, 29, 44, 45 and 61-66 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 2871

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term “wherein the deflecting elements are dielectric made of different materials and are over electric conductive layers along the perimeter of each pixel” is indefinite. It is not clear what dielectric material needs to be compared to when determining if it is a different material. That is, is the dielectric different from the other deflection elements or from other layers in the cell. Per claim 7, for examination purposes the examiner assumes the dielectric on one substrate is different from then dielectric on the other substrate. For claim 17, the examiner assumes the dielectric is different from the substrate.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-3, 6-9, 12-13, 21-24 and 32-37 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by 5953093 (“093”).

Per claims 1 and 21, 093 teaches a liquid crystal display with plurality of pixels comprising: two plane substrates [31a and 32a] with electric conductive layers deposited on sides of the substrates facing each other [31c and 32c], the electric conductive layers covered with aligning layers [31e, 32e] and liquid crystal filling the space between the substrates [33]; and

Art Unit: 2871

deflecting elements on at least one of the substrates, wherein the deflecting elements are dielectric and are over electric conductive layers along the perimeter of each pixel [insulator 31d which cover much of the pixel including the perimeter].

Per claims 2, 12 and 22, 093 teaches the liquid crystal display according to claim 1, wherein the deflecting elements are made of material with the resistivity equal, or exceeding the resistivity of the liquid crystal [the materials used include SiN which has a higher resistivity than liquid crystal].

Per claims 3 and 13, 093 teaches the liquid crystal display according to claim 1, wherein the deflecting elements are additionally disposed within the area of each pixel [see figure 10 and 11, the insulator 31d is clearly within the pixel region].

Per claims 6 and 23, 093 teaches the liquid crystal display according to claim 1, wherein the deflecting elements are on both substrates over the electric conductive layers [see figure 16, insulators 31d and 32d are on both electrodes].

Per claims 7 and 24, 093 teaches a liquid crystal display with plurality of pixels comprising: two plane substrates [31a, 32a] with electric conductive layers deposited on sides of the substrates facing each other [31c, 32c], the electric conductive layers covered with aligning layers and liquid crystal filling the space between the substrates [31e, 32e, 33]; and deflecting elements on both of the substrates, [31d, 32d] wherein the deflecting elements are dielectric made of different materials and are over electric conductive layers along the perimeter of each pixel [see column 13, lines 21-27, the insulator can be formed from any one of the materials listed].

Per claim 8, 093 teaches the liquid crystal display according to claim 1, wherein the deflecting elements have varying height [see figure 14, the dielectric is formed to have two distinct heights].

Art Unit: 2871

Per claims 9, 19 and 25, 093 teaches a liquid crystal display with plurality of pixels, comprising two plane substrates [31a, 32a] with electric conductive layers deposited on sides of the substrates facing each other [31c, 32c], the electric conductive layers covered with aligning layers and liquid crystal filling the space between the substrates [31e, 32e, 33]; and deflecting elements on at least one of the substrates [31d], wherein the deflecting elements are dielectric and over the electric conductive layer and the area between the deflecting elements is filled with a supplemental coating [31g, see example 7].

Per claim 32-34, 093 teaches the liquid crystal display according to claim 1, wherein the deflecting elements have a height less than or equal to the thickness of the space between the substrates [see figures the insulator is less than the gap].

Per claims 35-37, 093 teaches the liquid crystal display according to claim 1, wherein the deflecting elements are disposed apart from one another by a gap when viewed in a direction normal to said substrates [see the figures].

Claims 38-39, 42-43, and 58-60, 68-71 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by 5668651 ("651").

Per claim 38-39, 42-43, 651 teaches a multi-domain liquid crystal display with plurality of pixels, comprising: two plane substrates with electric conductive layers deposited on sides of the substrates facing each other [12,13,14,16], the electric conductive layers covered with aligning layers [15,17] and liquid crystal filling the space between the substrates [20]; and deflecting elements on at least one of the substrates, wherein the deflecting elements are dielectric [polymer walls 18], wherein the liquid crystal has a negative dielectric anisotropy [see last paragraph column 16].

Art Unit: 2871

Per claim 40, 651 teaches the liquid crystal display according to claim 38, wherein the deflecting elements are disposed within the area of each pixel [see figures 1A and 5].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 4-5, 14-18, 30-31 -32 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Fujimori et al. patent ('093).

Per claims 4, 14 and 30 093 teaches the liquid crystal display according to claim 1, but lacks a black matrix made of deflecting elements. However, it was well known to use black masks to increase contrast. Furthermore, using the same material would allow for a reduction in the number of manufacturing steps. Accordingly, it would have been obvious to one of ordinary skill at the time the invention was made.

Per claims 5, 15 and 31 093 teaches liquid crystal display according to claim 1, but lacks the deflecting elements have a height of at least about 0.1 microns. However, at column 13, 093

Art Unit: 2871

teaches the insulator being 0.1 microns and overlapping ranges are at least obvious. See In re Malagari, 499 F.2d 1297 (CCPA 1974).

Per claim 16, 093 teaches the liquid crystal display according to claim 9, but lacks the deflecting elements are on both substrates over the electric conductive layers. However, 093 also teaches placing the deflecting layer on both substrates for the benefit of offering the same effect as can be obtained when the line width or line spacing of the line-patterned insulating film 31d is reduced [see column 16 lines 19-21]. Accordingly, it would have been obvious to one of ordinary skill at the time the invention was made.

Per claim 17, 093 teaches a liquid crystal display with plurality of pixels, comprising: two plane substrates with electric conductive layers deposited on sides of the substrates facing each other, the electric conductive layers covered with aligning layers and liquid crystal filling the space between the substrates; and deflecting elements on both of the substrates [see figure 16], the deflecting elements are dielectric and of different materials and over the electric conductive layer, but lacks the area between the deflecting elements is filled with a supplemental coating. However, 093 also teaches filling the gap with a supplemental coating, see example 7 in order to eliminate viewing angle dependence [see column 15, lines 40-41].

Per claim 18, 093 teaches the liquid crystal display according to claim 9, but lacks the deflecting elements have varying height. However, 093 also teaches deflecting elements having different heights as taught by example I for improving viewing angles. Accordingly, it would have been obvious to one of ordinary skill at the time the invention was made.

Claims 41 and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over the 651.

Per claims 41 and 67, 651 teaches the liquid crystal display according to claim 38, but lacks the black matrix made of deflecting elements. However, it is well known to form polymer walls with light shielding material in order to increase contrast. Accordingly, it would have been obvious to one of ordinary skill at the time the invention was made.

Allowable Subject Matter

Claims 10-11, 26-27, 29, 44-45 and 61-66 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Per claims 10, 26 and 29, 093 teaches the liquid crystal display according to claim 9, but fails to teach or suggest the following: "on the top of the supplementary coating, an additional conductive layer is deposited."

Per claim 11 and 27, 093 teaches the liquid crystal display according to claim 9, but fails to teach or suggest the following limitation: "wherein over the deflecting elements and supplementary coating, an additional layer is formed of the material of the deflecting elements."

Claims 20, 28 and 46-57 are allowed.

Per claim 20 and 28, 093 teaches a liquid crystal display with plurality of pixels, comprising: two plane substrates with electric conductive layers deposited on sides of the substrates facing each other, the electric conductive layers covered with aligning layers and liquid crystal filling the space between the substrates; and deflecting elements on at least one of the substrates, wherein the deflecting elements are dielectric and over the electric conductive layer and wherein the area between the deflecting elements is filled with a supplemental coating. The prior art of record fail to teach or suggest the dielectric material made of the same material as the substrate and wherein the electric conductive layer is deposited on the top of the supplementary coating.

Per claim 46 and its associated dependent claims, the prior art of record teaches multi-domain liquid crystal display with plurality of pixels, comprising: two plane substrates with electric conductive layers deposited on sides of the substrates facing each other, the electric conductive layers covered with aligning layers and liquid crystal having filling the space between the substrates; and deflecting elements on at least one of the substrates, wherein the deflecting elements are dielectric and over the electric conductive layer and the area between the deflecting elements is filled with a supplemental coating. The prior art of record fails to teach or

Art Unit: 2871

suggest in combination with the above limitations the liquid crystal having a negative dielectric anisotropy.

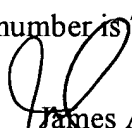
Response to Arguments

The arguments were not persuasive and a new grounds of rejection was presented.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Dudek whose telephone number is 308-4782. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 703-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7721 for regular communications and 703-308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


James A. Dudek
Primary Examiner
Art Unit 2871

May 30, 2003